FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 26 to May 2, 2015 (week 17)

Overall Summary

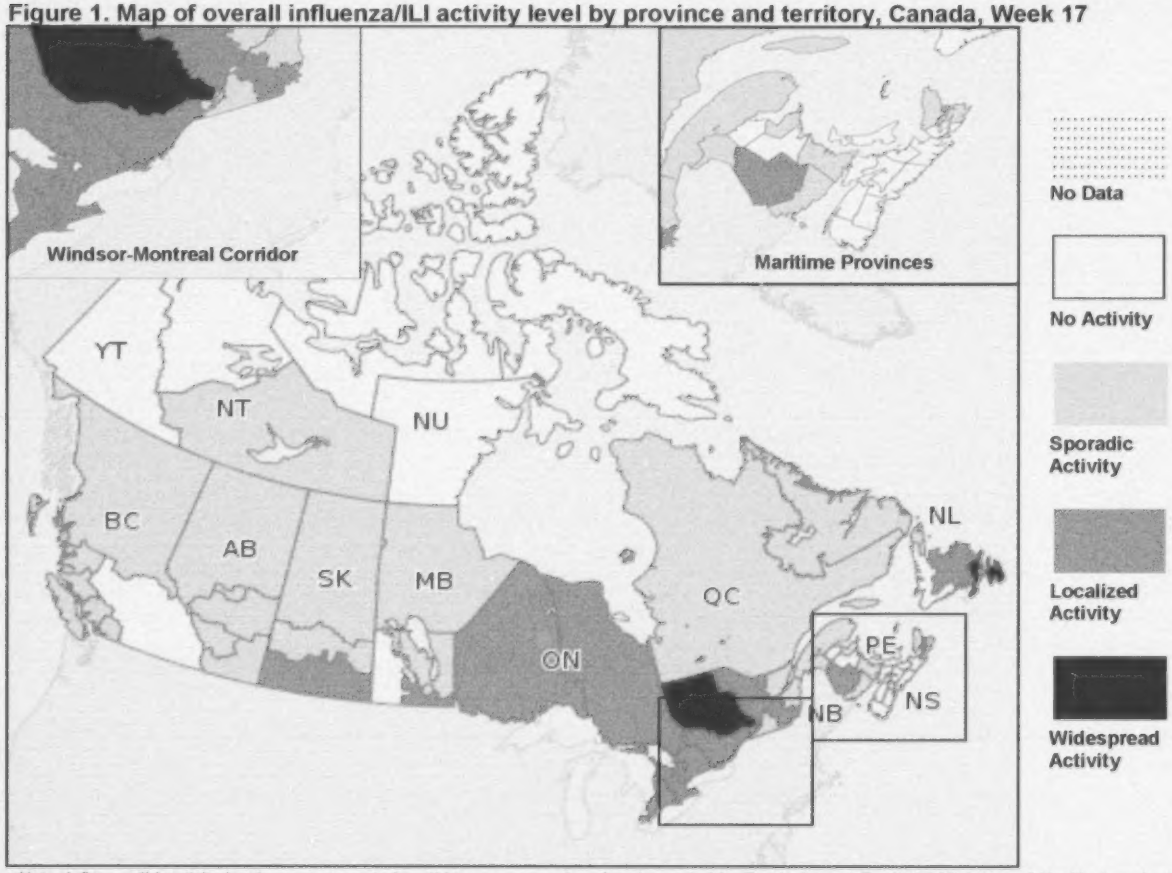
- Influenza B continues to be the most common influenza virus circulating in Canada; however, influenza B is past its peak and remains within expected levels for this time of year.
- Overall, influenza activity in Canada continues to decline; however, elevated activity was still reported in week 17 (mostly in Central Canada and parts of the Atlantic Provinces).
- Influenza B is having a greater impact on adults less than 65 years of age, compared to influenza A(H3N2), which predominated earlier in the season.
- Fewer influenza hospitalizations were reported this week compared to the previous week. The majority of hospitalizations were due to influenza A and in adults ≥65 years of age.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2014-15 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/ILI Activity (geographic spread)

In week 17, one region in QC and one region in NL reported widespread activity. Twelve regions reported localized activity: SK, MB, ON(7), QC, NL and NB. Twenty-five regions reported sporadic activity: NT, BC(4), AB(5), SK(2), MB(3), QC(4), NL, NB(4), and NS. Nineteen regions reported no activity: YK, NT, NU(3), BC, MB, NL, NB(2), NS(8), and PE.

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 17

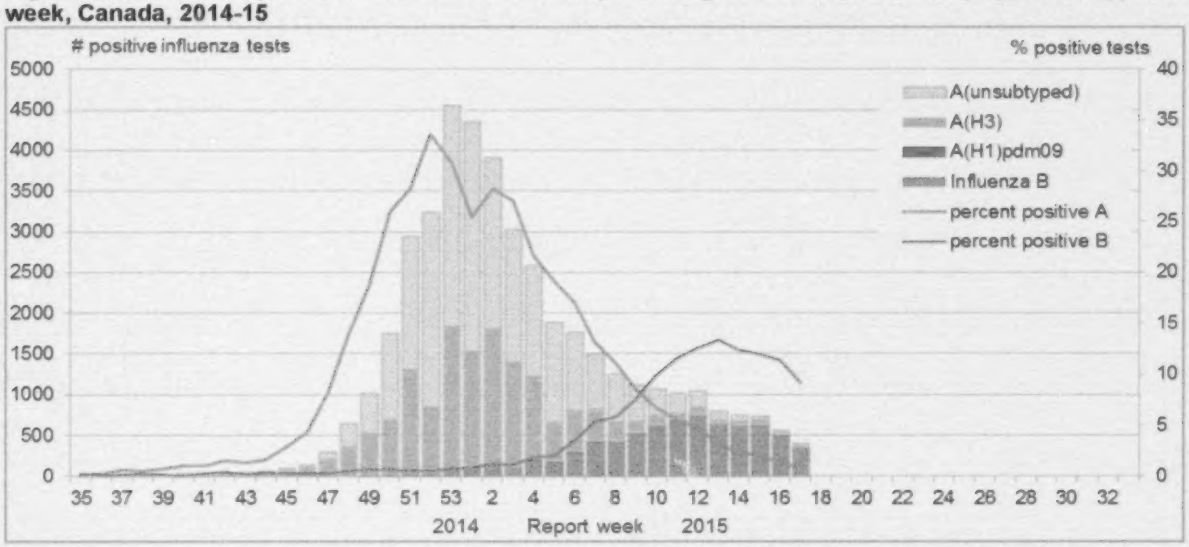


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

In week 17, the percentage positive for influenza A (0.9%) and B (9.2%) declined from the previous week (Figure 2). Influenza B remained the predominant virus in week 17, representing 90% of influenza detections. Most jurisdictions reported stable or declining levels of influenza detections over recent weeks. To date, 82% of influenza detections have been influenza A, and 99.6% of those subtyped have been A(H3N2) (Table 1). To date this season, detailed information on age and type/subtype has been received for 36,461 cases (Table 2). Adults ≥65 years of age have predominantly been affected by influenza A, accounting for 62% of influenza A detections. Influenza B, while much smaller in numbers, is mainly affecting individuals less than 65 years of age, they account for 59% of influenza B detections.

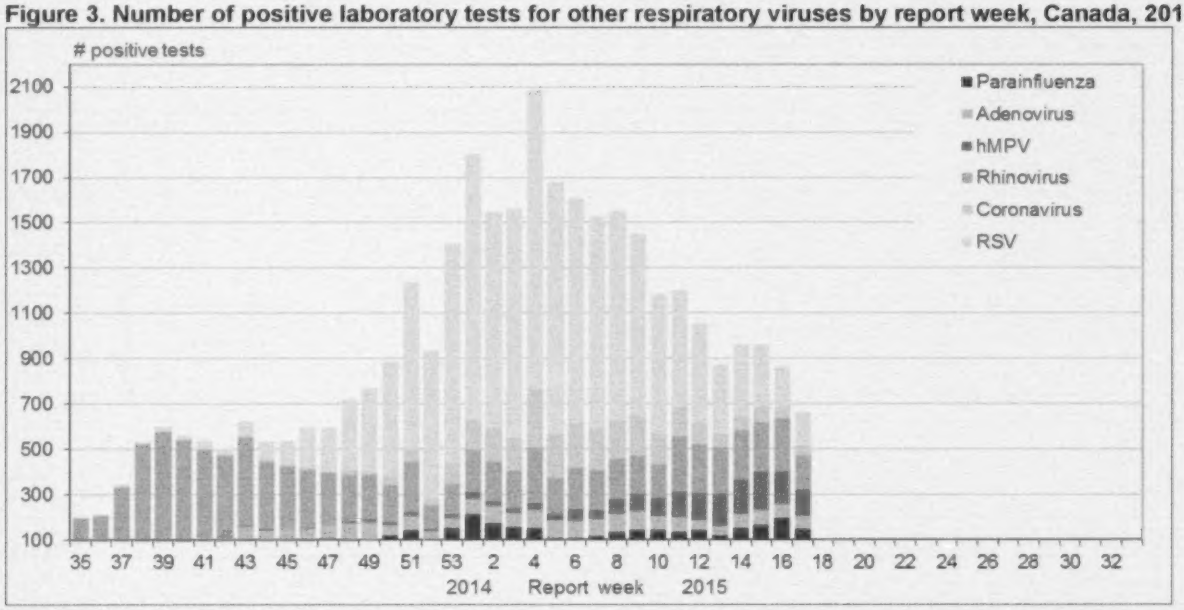
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2014-15



In week 17, detections for all other respiratory viruses decreased from the previous week (Figure 3). In recent weeks, detections of human metapneumovirus and parainfluenza have been higher than those reported in each of the past three seasons.

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2014-15



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2014-15

Reporting provinces[1]	Weekly (April 26 to May 2, 2015)					Cumulative (August 24, 2014 to May 2, 2015)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	2	0	0	2	30	3519	28	2626	865	415
AB	0	0	0	0	37	3699	14	3531	154	881
SK	1	0	0	1	16	1314	0	839	475	272
MB	0	0	0	0	20	1122	0	390	732	185
ON	9	0	8	1	80	11149	48	4709	6392	1297
QC	21	0	0	21	129	11429	4	422	11003	3737
NB	2	0	1	1	21	1195	0	193	1002	505
NS	0	0	0	0	4	511	1	123	387	258
PE	0	0	0	0	0	131	1	128	2	108
NL	2	0	0	2	7	622	0	123	499	48
Canada	**37**	**0**	**9**	**28**	**344**	**34691**	**96**	**13084**	**21511**	**7706**
Percentage[2]	9.7%	0.0%	24.3%	75.7%	90.3%	81.8%	0.3%	37.7%	62.0%	18.2%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2014-15

Age groups (years)	Weekly (April 26 to May 2, 2015)					Cumulative (August 24, 2014 to May 2, 2015)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	4	0	0	4	13	2091	22	809	1260	489	2580	7.1%
5-19	1	0	0	1	21	1783	6	957	820	709	2492	6.8%
20-44	2	0	0	2	33	3436	16	1669	1751	970	4406	12.1%
45-64	3	0	1	2	41	3863	21	1658	2184	1626	5489	15.1%
65+	13	0	2	11	95	18721	15	7280	11426	2646	21367	58.6%
Unknown	0	0	0	0	0	120	0	101	19	7	127	0.3%
Total	23	0	3	20	203	30014	80	12474	17460	6447	36461	100.0%
Percentage[2]	10.2%	0.0%	13.0%	87.0%	89.8%	82.3%	0.3%	41.6%	58.2%	17.7%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Antiviral Resistance

During the 2014-2015 influenza season, the NML has tested 1,382 influenza viruses for resistance to oseltamivir and 1,379 influenza viruses for resistance to zanamivir. All viruses were sensitive to zanamivir and one influenza A(H3N2) virus was resistant to oseltamivir. A total of 1,351 influenza A viruses (99.9%) were resistant to amantadine (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2014-15

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	876	1	874	0	1338	1337 (99.9%)
A (H1N1)	10	0	10	0	14	14 (100%)
B	496	0	495	0	NA[1]	NA[1]
TOTAL	1382	1	1379	0	1352	1351

[1]NA: Not Applicable

Influenza Strain Characterizations

During the 2014-2015 influenza season, the National Microbiology Laboratory (NML) has characterized 750 influenza viruses [185 A(H3N2), 15 A(H1N1) and 550 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assay (n=185), one virus was antigenically similar to A/Texas/50/2012, five showed reduced titers to A/Texas/50/2012 and 179 were antigenically similar to A/Switzerland/9715293/2013, which is the influenza A(H3N2) component recommended for the 2015 Southern Hemisphere influenza vaccine. Additionally, 1,105 A(H3N2) viruses were unable to be tested by HI assay; however, sequence analysis showed that 1,103 belonged to a genetic group that typically shows reduced titers to A/Texas/50/2012. **Influenza A(H1N1):** Fifteen A(H1N1) viruses characterized were antigenically similar to A/California/7/2009. **Influenza B:** Of the 550 influenza B viruses characterized, 523 viruses were antigenically similar to B/Massachusetts/2/2012, three viruses showed reduced titers against B/Massachusetts/2/2012, and 24 were B/Brisbane/60/2008-like (Figure 4).

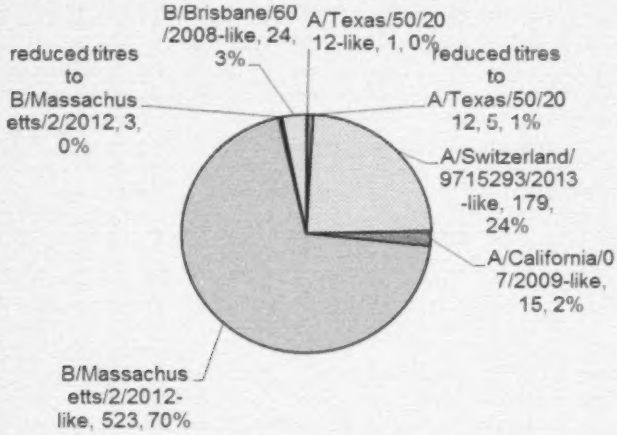

B/Brisbane/60 /2008-like, 24, 3%
A/Texas/50/20 12-like, 1, 0%
reduced titres to B/Massachus etts/2/2012, 3, 0%
reduced titres to A/Texas/50/20 12, 5, 1%
A/Switzerland/ 9715293/2013 -like, 179, 24%
A/California/0 7/2009-like, 15, 2%
B/Massachus etts/2/2012-like, 523, 70%

Figure 4. Influenza strain characterizations, Canada, 2014-15, N = 750

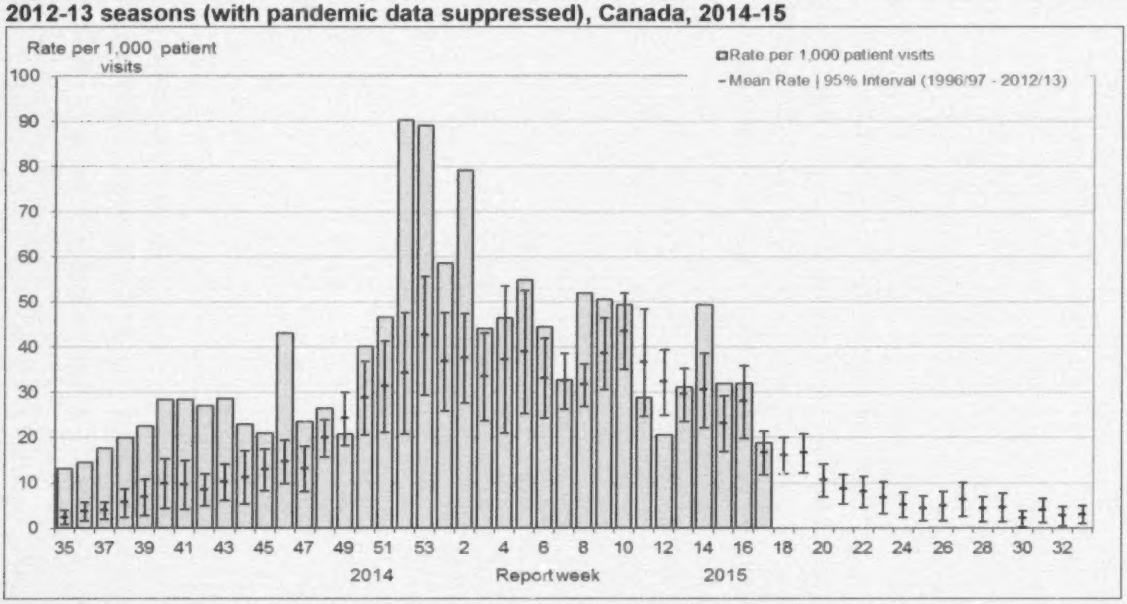
The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2014-2015 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Texas/50/2012 (H3N2)-like virus, and a B/Massachusetts/2/2012-like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus is recommended.

Influenza-like Illness Consultation Rate

In week 17, the national influenza-like-illness (ILI) consultation rate declined from the previous week to 18.7 consultations per 1,000 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2014-15

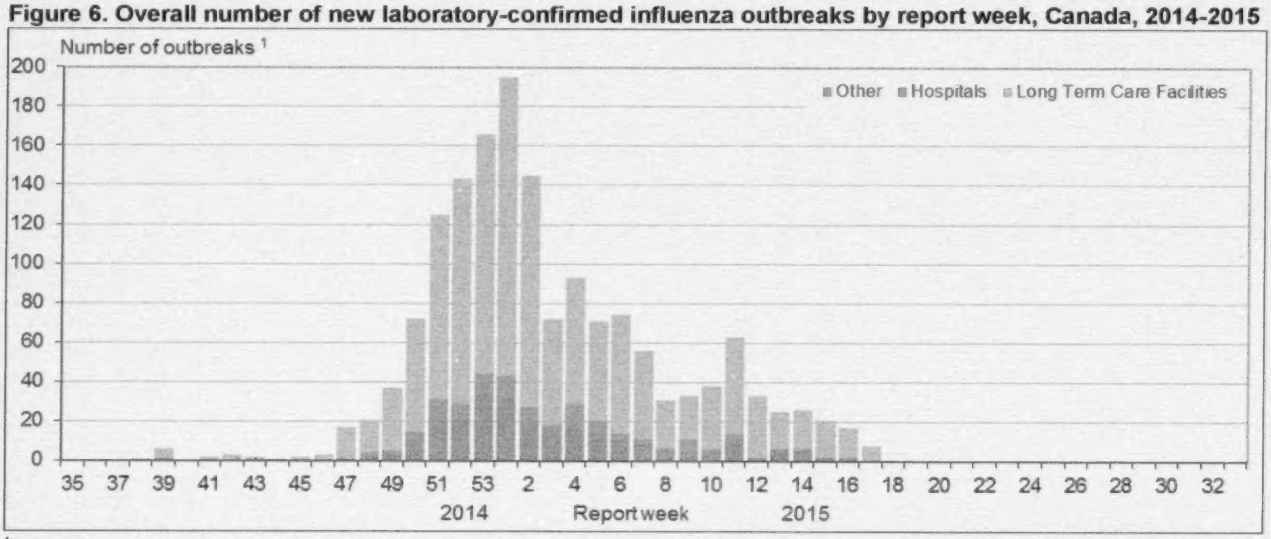


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 17, eight new outbreaks of influenza were reported. All outbreaks were reported in long-term care facilities (LTCF) (Figure 6) and three of the eight outbreaks were associated with influenza B. To date this season, 1,254 outbreaks in LTCFs have been reported and the majority of those with known subtypes were attributable to A(H3N2). There have been a higher number of reported influenza outbreaks to date this season compared to the same period in previous seasons.

Figure 6. Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2014-2015

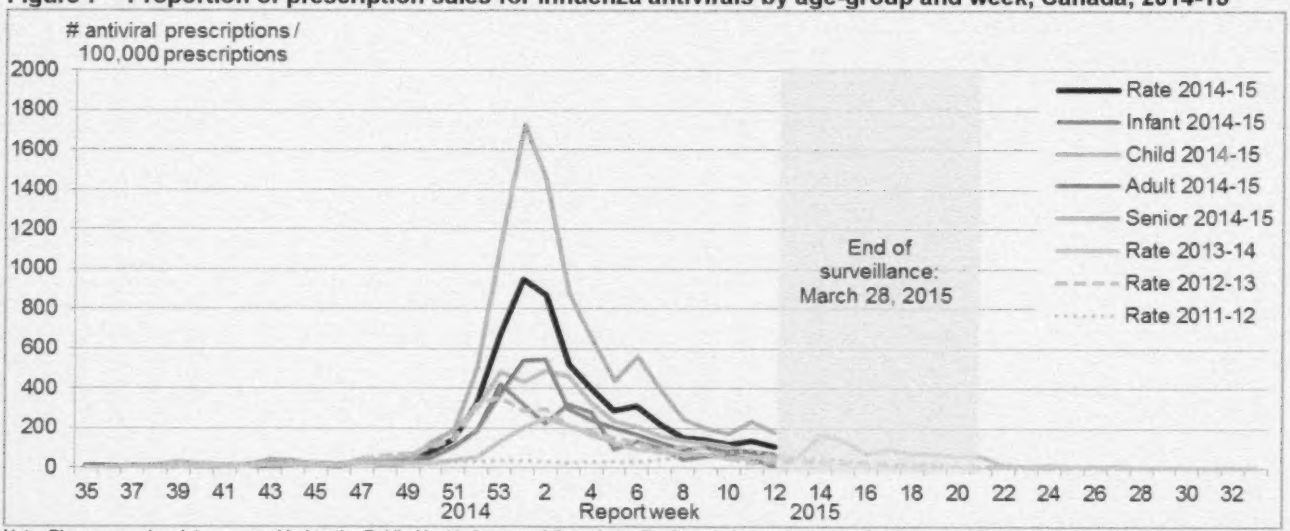


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

Pharmacy surveillance for sales of influenza antivirals has ended for the 2014-2015 influenza season (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2014-15



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 17, nine laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. All cases were influenza B (Figure 8a). A greater proportion of cases have been reported with influenza B in recent weeks, following the trend in laboratory detections. Among the reported cases, four (44%) were <2 years of age and five (56%) were 2 to 9 years of age. No ICU cases were reported.

To date this season, 676 hospitalizations have been reported by the IMPACT network, 509 (75%) of which were cases of influenza A. Among cases for which the influenza A subtype was reported, 98% (161/164) were A(H3N2) (Table 4). To date, 83 cases were admitted to the ICU, of which 46 (55%) were 2 to 9 years of age (Figure 9a). A total of 54 ICU cases reported to have at least one underlying condition or comorbidity. Four deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (CIRN)

In week 17, five laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the Canadian Immunization Research Network (CIRN) Serious Outcomes Surveillance (SOS) network. All reported cases were influenza B. Three cases (60%) were in adults over the age of 65 (Figure 8b).

To date this season, 2,228 cases have been reported; 1,912 (86%) with influenza A. The majority of cases (81%) were among adults ≥65 years of age (Table 5). One hundred and seventy two ICU admissions have been reported and 128 cases were adults ≥65 years of age. Among the 172 ICU admissions, 27 were due to influenza B (12 in adults 45 to 64 years of age and 15 in adults over the age of 65). A total of 123 ICU cases (72%) reported to have at least one underlying condition or comorbidity. Of the 123 ICU cases with known immunization status, 40 (33%) reported not having been vaccinated this season. One hundred and thirty-five deaths have been reported, 124 (92%) of the deaths were adults >65 years of age (Figure 9B).

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2014-15

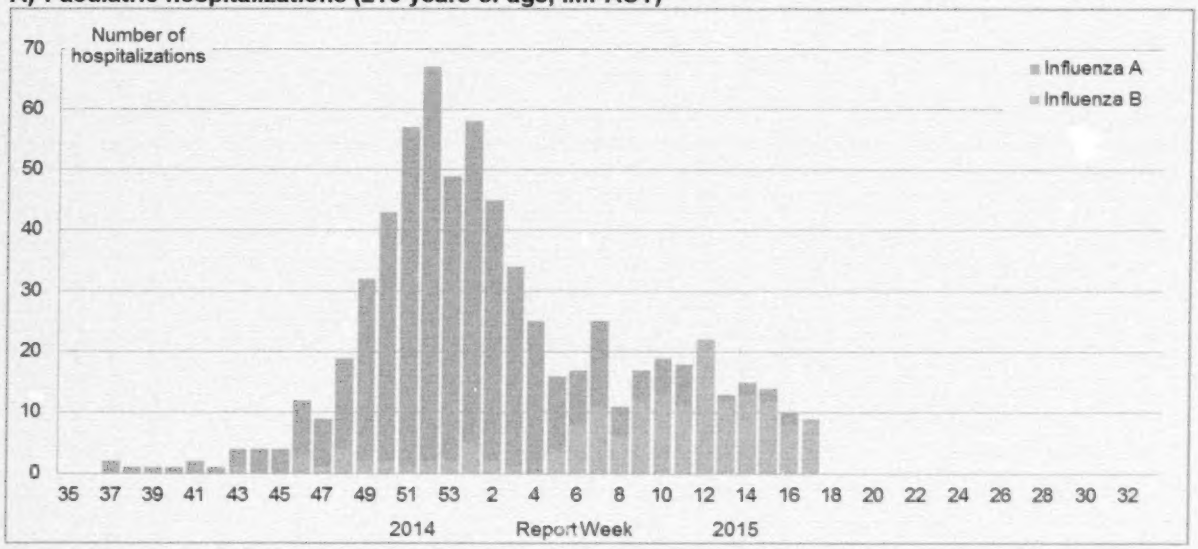
Age groups	Cumulative (24 Aug. 2014 to 2 May 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	81	0	18	63	12	93 (13.8%)
6-23m	114	2	36	76	34	148 (21.9%)
2-4y	124	1	38	85	45	169 (25.0%)
5-9y	129	0	44	85	49	178 (26.3%)
10-16y	61	0	25	36	27	88 (13.0%)
Total	509	3	161	345	167	676
% [1]	75.3%	0.6%	31.6%	67.8%	24.7%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2014-15

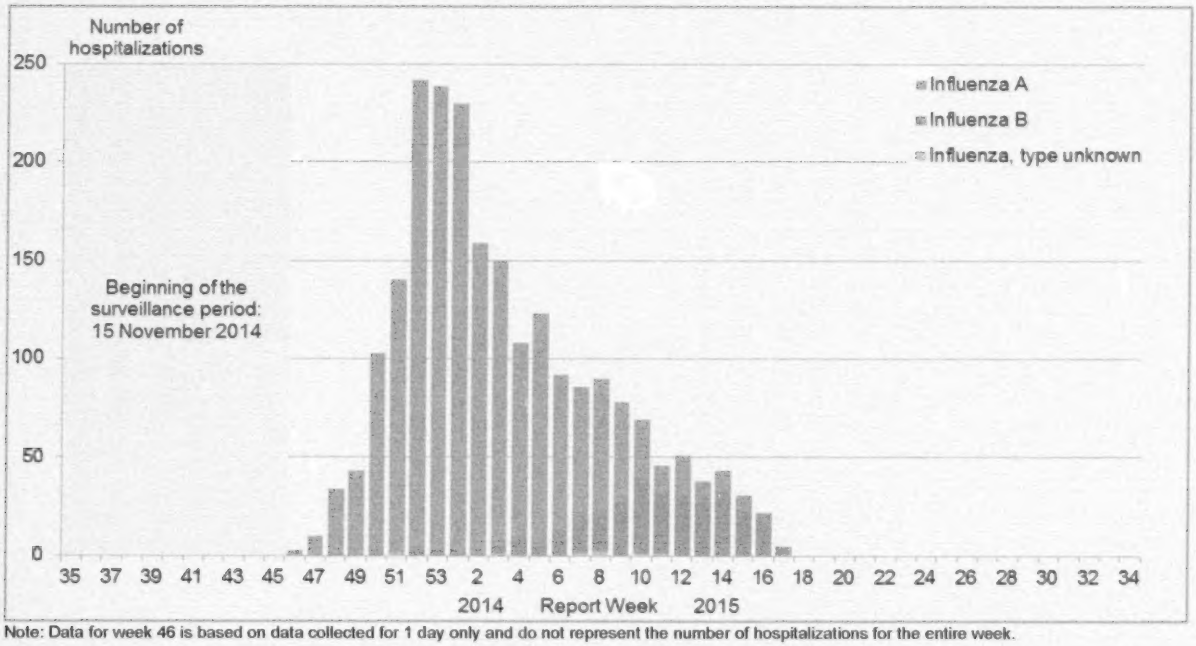
Age groups (years)	Cumulative (15 Nov. 2014 to 2 May 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	3	0	1	2	1	4 (0.2%)
20-44	106	1	56	49	16	122 (5%)
45-64	217	3	99	115	76	293 (13%)
65+	1586	4	760	822	223	1809 (81%)
Total	1912	8	916	988	316	2228
%	86%	0.4%	48%	52%	14%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2014-15
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



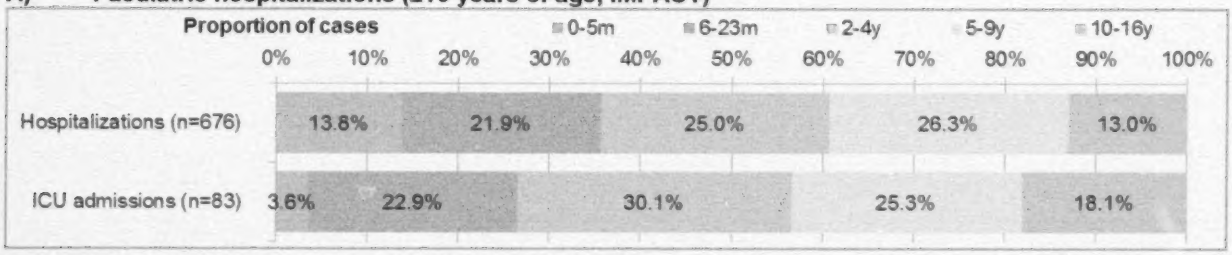
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



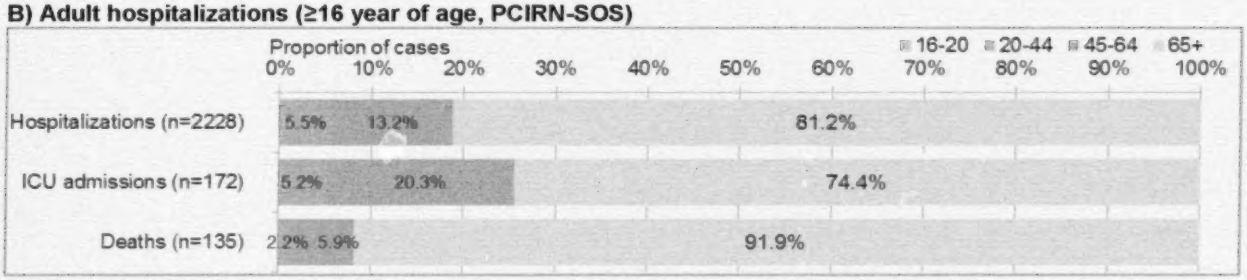
Note: Data for week 46 is based on data collected for 1 day only and do not represent the number of hospitalizations for the entire week.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2014-15

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 17, 88 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*, which is lower than the number reported the previous week. Of the 88 hospitalizations, 53 (60%) were due to influenza A and 45 (51%) were in patients ≥65 years of age.

Since the start of the 2014-15 season, 7,375 hospitalizations have been reported; 6,471 (88%) with influenza A. Among cases for which the subtype of influenza A was reported, 99.3% were A(H3N2). The majority of cases (71%) were ≥65 years of age (Table 6). A total of 384 ICU admissions have been reported to date: 53% (n=202) were in adults ≥65 years of age and 33% (n=128) were in adults 20-64 years. A total of 555 deaths have been reported since the start of the season: three children <5 years of age, four children 5-19 years, 42 adults 20-64 years, and 506 adults ≥65 years of age. Adults 65 years of age or older represent 91% of all deaths reported this season. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2014-15

Age groups (years)	Cumulative (24 Aug. 2014 to 2 May 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	422	3	150	269	73	495 (7%)
5-19	277	2	133	142	95	372 (5%)
20-44	385	4	232	149	104	489 (7%)
45-64	614	9	261	344	124	738 (10%)
65+	4717	3	2245	2469	488	5205 (71%)
Unknown	56	1	52	3	20	76 (1%)
Total	6471	22	3073	3376	904	7375
Percentage[1]	87.7%	0.3%	47.5%	52.2%	12.3%	100.0%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2014-15 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Since the last FluWatch report, no new laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus were reported by the World Health Organization. Globally to May 5, 2015, the WHO reported a total of 651 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 225 deaths. Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Since the last FluWatch report, no new laboratory-confirmed cases of MERS-CoV have been reported by the World Health Organization. Globally, from September 2012 to May 5, 2015, the WHO has reported a total of 1,110 laboratory-confirmed cases of infection with MERS-CoV, including 422 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East. The public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk) and for the latest global risk assessment posted by the WHO on February 5, 2015: WHO MERS-CoV

Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

Avian Influenza A(H5)

The Canadian Food Inspection Agency (CFIA) is continuing its investigation into the second outbreak of highly pathogenic avian influenza H5N2 virus in Oxford County, Ontario. To date, there have been three infected commercial premises. Individual quarantines and Avian Influenza Control Zones have been established. No human cases have been reported. Avian influenza viruses do not pose risks to food safety when poultry and poultry products are properly handled and cooked. Avian influenza rarely affects humans that do not have consistent contact with infected birds. Further information on the outbreak is provided on the following CFIA website:

CFIA - Notifiable Avian Influenza

International Influenza Reports

World Health Organization influenza update
World Health Organization FluNet
WHO Influenza at the human-animal interface
Centers for Disease Control and Prevention seasonal influenza report
European Centre for Disease Prevention and Control - epidemiological data
South Africa Influenza surveillance report
New Zealand Public Health Surveillance
Australia Influenza Report
Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2014-2015 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.